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Revascularization Therapy: Who, How & When?

### Announcer:

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### Dr. Hess:

Hello and welcome to the session on Revascularization Therapy: Who, How & When? My name is Dr. Connie Hess. I'm an Interventional Cardiologist at the University of Colorado.

### Dr. Farber:

And my name is Alik Farber, and I'm a Vascular Surgeon at Boston Medical Center in Boston.

### Dr. Hess:

Great. Well, we're going to start with the who for revascularization in peripheral artery disease. And I think it's important to recognize that there are four clinical subsets of PAD that have been defined in the 2024 guidelines, and we'll go through each of them and who is a candidate for revascularization therapy.

The first is the asymptomatic group. These are patients with objective evidence of PAD but report no leg symptoms. And really, for this group, there's not an indication for revascularization per se. Certainly, there might be times where a revascularization is needed to facilitate another procedure for which large-bore access is required, such as a TAVR. But otherwise, these patients generally have no indication for revascularization procedures up front.

The second group, defined as the chronic symptomatic PAD subset, these are patients who have what we think of as typical claudication or non-joint-related exertional leg symptoms. And for this patient population, there are indications for revascularization which include improvement of symptoms, improvement of quality of life, and improvement in walking function, as they do have impairments in those. The third group are the group of patients with chronic limb-threatening ischemia, or CLTI. For this group, there is definitely a Class 1 indication for revascularization to preserve tissue, so to reduce ischemic leg pain, to help with wound healing and for limb preservation, i.e., to prevent amputation.

And similarly, in the fourth group, there is the fourth group of acute limb ischemia, those patients also have a Class 1 indication for emergent revascularization for limb preservation and to prevent amputation.

### Dr. Farber:

Yeah. Another thing to add is that in patients who have vein bypasses in the leg or prior stents, who have developed restenosis and may be asymptomatic, there is also an indication to intervene for those cohorts of patients as well.

Maybe I can move on and talk about the how, how we revascularize. Of course, revascularization is bringing blood flow into the foot. There are three types of revascularization: there is surgical therapy, there is endovascular therapy, and hybrid therapy, which is a combination of surgical and the vascular approaches.

When you think about surgical therapy, there are really three basic interventions that we do. Number one is in the setting of acute limb ischemia, sometimes an embolectomy or thrombectomy is needed, and that's usually performed on the common femoral artery or the popliteal artery. For those patients who have chronic ischemia, an endarterectomy may be needed, and that's typically performed on the common femoral or deep femoral artery. The artery is opened up and the plaque is removed, and usually an artery is sewn together with a patch.

And for those who have infrainguinal occlusive disease that requires intervention, those patients benefit from a bypass procedure. When performing a bypass procedure, are three considerations that are important. Number one, the conduit used, the best conduit is single-segment great saphenous vein, but in some scenarios, prosthetic bypass, alternative autogenous vein bypass, and sometimes even cryopreserved vein bypass are appropriate.

The other concept to think about is inflow. It is important that the arteries coming into the groin are appropriately well treated, so that there's no disease proximal to those arteries. And lastly, it's the runoff, which is really the arteries beyond the areas of disease to which one would sew the bypass.

In the other bucket are the endovascular therapy procedures, and those include a large number of therapies that are typically predicated on angioplasty and stenting, but there are other procedures that are used. Atherectomy is a procedure that's used. There are multiple techniques that are used to cross various lesions. And in addition to stenting and angioplasty, there's drug elution using both balloons and stents that has been used. And finally, stent grafts are also used in some scenarios.

And in some clinical scenarios, both procedures might be necessary, both a surgical procedure and an endovascular procedure. And those are called hybrid procedures. The one thing I left out is that in treating acute limb ischemia, sometimes thrombolysis or mechanical thrombectomy is also used.

**Dr. Hess:**

Perfect. I think, in terms of the when, I'll touch a little bit on that. So I think the general question of when to revascularize definitely depends on the clinical indication. So in that chronic symptomatic group that I discussed, the patients with claudication, or sort of atypical exertional leg symptoms, it is important to note that patients should be optimized in terms of medical therapy, and that includes structured exercise. Structured exercise has been shown to improve walking distance and improve walking function. And so, in this group, you know, revascularization is usually reserved for patients who have failed optimal medical therapy.

In patients with CLTI, certainly we're talking about urgent procedures for limb salvage and reduction of rest pain. So this is sort of days to sort of maybe 1 or 2 weeks out. And then for ALI, these are the patients who do require emergent procedures to restore blood flow because their limbs are threatened. And we certainly want to reduce amputation.

Maybe in terms of the when of endo versus surgical, I might turn to you, Dr. Farber, for some input here.

**Dr. Farber:**

Yeah, so both procedures are standard of care for chronic limb-threatening ischemia. And there is evidence coming out from recently published trials that bypass with single-segment saphenous vein in patients who are candidates for both surgical and endovascular procedures, might do better than endovascular therapy as initial treatment. But I think in deciding which treatment is best, all sorts of considerations need to be evaluated, including the clinical profile of the patient, the anatomy, whether or not single-segment saphenous vein is available, whether or not prior interventions have been tried, and so on.

**Dr. Hess:**

Absolutely. I think you do point out an important caveat there for patients who have available single-segment vein and so, certainly vein mapping in patients with CLTI is an important part of their, you know, sort of investigation of the best treatment plan.

I think also, you know, operator and institutional experience. You know, what operational experience the operator has, what techniques are available. Certainly patient comorbidities, you know, are they high risk for surgery and specific procedures? And then finally, I think, as with all of medicine, shared decision-making and patient preference is important to consider.

Thank you very much for joining us.

**Dr. Farber:**

Thank you.

**Announcer:**

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